

City of Alexandria, Virginia

**Tidal Potomac Polychlorinated Biphenyls
(PCB) Total Maximum Daily Load (TMDL)
Action Plan**

**For compliance with 9VAC25-890, General VPDES Permit for Discharges
of Stormwater from Small Municipal Separate Storm Sewer Systems,
Permit No. VAR040057**

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Contents

1. Introduction	1
2. Background.....	1
3. Legal Authorities to Reduce Pollutant of Concern	2
4. Planning Framework	2
a. Principles.....	2
b. Action Goals	3
5. TMDL Development and Load Determination	3
6. Best Management Practice, Controls, and Design	4
a. Site Evaluation and Inspections for Municipal Facilities	5
i. Evaluation of Municipal Facilities	5
ii. Municipal Facility Inspections.....	6
b. Remediation Projects	6
c. Plan Review for Development and Redevelopment.....	7
d. Implementation of Erosion and Sediment Control Program	7
e. Promotion of Elimination and Reduction	8
7. Methods to Assess Action Plan Effectiveness.....	9
8. References	10

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1. Introduction

The General Virginia Pollutant Discharge Elimination System (VPDES) Permit for Discharges of Storm Water from Municipal Separate Storm Sewer Systems (MS4) No. VAR040057 was issued to the City of Alexandria (City) by Virginia Department of Environmental Quality (VDEQ) effective November 1, 2018 (2018 MS4 permit). This permit contains “Special Conditions” for local total maximum daily loads (TMDL) under Part II, TMDL Special Conditions, Section B, Local TMDL Special Condition that requires the City update any previously approved local TMDL action plan for TMDLs approved by U.S. Environmental Protection Agency (EPA) prior to July 1, 2013, no later than 18-months after the permit effective date.

This action plan builds on the action plan that was initially developed by the City and first submitted in 2015 in response to the Special Conditions included in the City’s General VPDES MS4 Permit, effective July 1, 2013 (2013 MS4 permit). The 2013 MS4 permit included the requirement for the City to develop initial action plans to address TMDLs where a wasteload allocation (WLA) was assigned to the MS4. The 2013 MS4 permit required the action plans be developed and incorporated into the updated MS4 program plan and implemented over multiple permit cycles using an iterative approach to adequately reduce the pollutant in a manner consistent with the assumptions and requirements of the specific WLA in the TMDL. This action plan identifies best management practices, measurable goals and milestones, and evaluation measures; assess all significant sources; and includes a method to assess effectiveness of the plan in reducing the WLA pollutant. In accordance with Table 1 in the 2013 MS4 permit, the City must develop action plans no later than June 30, 2015, for TMDLs approved by the State Water Control Board (SWCB) or EPA prior to July 2008, and no later than June 30, 2016, for TMDLs approved between July 2008 and June 2013. The updated action plan was developed based on the initial requirements in the 2013 MS4 permit as well as the local TMDL Guidance memo dated issued by VDEQ (April 2015) and incorporates any new information required under the 2018 MS4 Permit.

2. Background

The City of Alexandria’s (City) MS4 was assigned a WLA for polychlorinated biphenyls (PCB) in fish tissue in the Tidal Potomac PCB TMDL report completed by Interstate Commission on the Potomac River Basin (ICPRB) in 2007. The TMDL covers the Commonwealth of Virginia, the State of Maryland, and Washington, DC, and was approved by EPA on April 11, 2008. The TMDL was approved prior to July 9, 2008, and the initial PCB TMDL Action Plan was required to be submitted with the MS4 Program Plan submitted October 1, 2015. This action plan updates the previously submitted plan and includes best management practices and other interim milestone activities to be implemented during the 2018 – 2023 permit term, as well as activities that will continue beyond the current MS4 permit cycle. Any new or modified requirements will be considered and incorporated as applicable. To date, an implementation plan has not yet been developed for this TMDL.

PCBs were used as coolants and insulators, particularly in transformers, hydraulic equipment and electrical equipment. The manufacture of PCBs was banned in 1979 however, they are considered to be a “legacy pollutant” as they are very persistent in the environment and do not readily decompose under normal conditions. They also tend to sink into the sediment of waterways or terrestrial soils. PCBs may be released into the environment through leaks or fires in PCB containing equipment, accidental spills during transport, illegal or improper disposal,

burning of PCB containing oils in incinerators, leaks from hazardous waste sites, and historical releases during manufacture, use, and disposal.

3. Legal Authorities to Reduce Pollutant of Concern

The City has a number of legal tools available to address the possible discharge of PCBs from municipal facilities, development and redevelopment projects, or private properties. This action plan addresses possible pollutant sources from municipal properties as well as private properties.

The MS4 general permit regulates discharges from properties that are owned or operated by the City and discharges from private properties which drain to the MS4. The City may use expressed or implied authorities to regulate private lands with regard to stormwater management and MS4 permit requirements. The City may utilize its rights as the property owner or lessee to address possible sources of PCBs which may originate from City owned or operated properties.

Article XIII of the Alexandria Zoning Ordinance (the Environmental Management Ordinance) contains the requirements for standard plan submission requirements. Standard conditions developed during the plan review process and Special Use Permit (SUP) process are enforceable through the Zoning Ordinance. Development plans and SUPs subject to standard conditions must go before the Planning Commission for approval. Contaminated lands issues must be addressed by the applicant prior to approval.

Implementation of the City's Erosion and Sediment Control (E&SC) program derives authority from Chapter 4 of Title 5 (Transportation and Environmental Services, T&ES) of the Code of the City of Alexandria. This code requires that land-disturbing activities greater than or equal to 2,500 square feet develop an E&SC plan to be submitted for review and approval. Disturbances less than this threshold must implement E&SC measures, as needed, to prevent transport and deposition of sediment offsite. City staff performs inspections of land-disturbing activities per the requirements of the ordinance.

Chapter 13 of Title 11 of the City Code (Environmental Offenses) prohibits non-stormwater discharges to the storm sewer system. T&ES works closely with the Fire Marshall's Office Environmental Investigations Unit (EIU) to investigate and enforce illegal dumping and illicit discharge (IDDE) incidents.

4. Planning Framework

a. Principles

The City has established the following overarching principles to guide the approach to meet the goals of this action plan:

- Utilize existing programs and efforts;
- Encourage voluntary, practical, and cost-effective practices;
- Follow an adaptive, iterative approach;
 - Replaces dependency on numerical models and traditional planning by applying a focused "learning-by-doing" approach to decision making;
- Focus on phased implementation over multiple permit cycles; and
- Identify additional funding needs as necessary.

b. Action Goals

The City has established the following goals consistent with the principles in developing the action plan:

- **Consistent:** The action plan is consistent with the assumptions and requirements of the TMDL and conforms to general permit requirements and current MS4 program plan efforts to reduce pollutants to the maximum extent practicable.
- **Flexible:** The controls, best management plans (BMP), and design and methods discussed to reduce the pollutant of concern can be revised based on the observed effectiveness of these measures over multiple permit cycles, stakeholder involvement in the development of an implementation plan, changes to water quality standards, or introduction of new technologies and innovations to address the pollutant.
- **Cost Effective:** The 2008 – 2013, 2013 – 2018, and 2018 – 2023 MS4 general permits contained special conditions associated with existing TMDLs, which were integrated into program plan compliance activities. The appropriateness of existing efforts is considered first before revising these efforts. The cost of revising current efforts or creating additional measures, along with the incremental benefit of each, is taken into consideration.

5. TMDL Development and Load Determination

The Tidal Potomac PCB TMDL report (ICPRB, 2007) includes a study area of the tidal waters of Virginia on the Potomac River. As indicated in the TMDL report, the 2006 Water Quality Assessment Guidance Manual was used to develop the TMDL and provides specific descriptions of the geographic extent of the impairments. The Tidal Potomac PCB TMDL (ICPRB, 2007) includes regulated stormwater as a permitted point source and includes municipal and county level MS4 permittees with the following qualifier: “Some of the permits may cover areas located in direct drainage as well as tributary watershed segments, but the stormwater WLAs apply only to the direct drainage areas”. The TMDL document lists the impaired segments and associated WLAs, and contains an additional qualifier related to the applicable TMDLs which states “[d]irect drain loads were allocated to watershed segments and to FIPS [Federal Information Processing Standards] code jurisdictions within segments, and apply only to the portion of jurisdictions that are in direct drain watersheds.” And finally, the TMDL states that “...the NPDES [National Pollutant Discharge Elimination System] regulated stormwater WLAs, shown in Tables 5-7 and 12 apply only to the direct drainage portions of the MS4 permitted jurisdictions...tributary stormwater WLAs have not been characterized as part of this TMDL effort.” While it is clear that the WLA does not apply to the entire MS4 area, the City continues to target reduction strategies for the entire MS4 area, as appropriate. Figure 1 indicates the

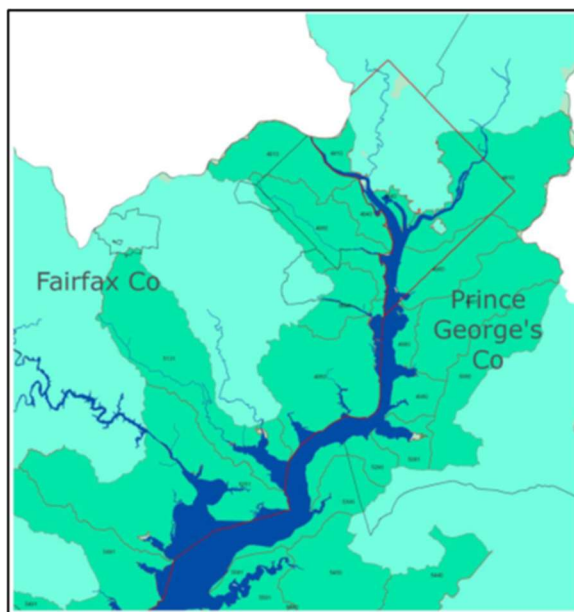


Figure 1. Direct Drain Watershed Segments in Upper Basin (ICPRB, 2007)

location of direct drain watersheds in green which were used to calculate the WLA for MS4 permits.

The TMDL states that the data and information used for setting loads are not detailed enough to determine WLAs for individual regulated outfalls; therefore, loads from regulated NPDES stormwater outfalls are expressed in the TMDL document as single stormwater WLAs for each impaired waterbody. These stormwater WLAs are calculated by multiplying the PCB direct drainage load by the percent of developed land. Table 1 provides the WLAs associated with impaired segments in the City.

Table 1. WLAs Associated with Impaired Segments for City of Alexandria

Impaired Waterbody	Watershed Code	WLA for Regulated Stormwater (g/yr)
Lower Potomac and Four Mile Run	4960	2.98
Lower Potomac and Hooff's Run & Hunting Creek	4980	0.503
Hooff's Run & Hunting Creek	5090	6.79
	Total	10.3

6. Best Management Practice, Controls, and Design

As referenced in the Tidal Potomac PCB TMDL (ICPRB, 2007), adaptive management is an iterative implementation process that makes progress toward achieving water quality goals while using new data and information to reduce uncertainty and adjust implementation activities. The focus is oriented towards increasingly efficient management and restoration. Strategies may change if warranted by new data and information. The jurisdictions involved in the Tidal Potomac PCB TMDL effort agreed that following the adaptive implementation guidelines are appropriate due to the uncertainty associated with the TMDL loading capacity and specific allocation scheme. Therefore, implementation strategies may include additional data collection concurrently with activities to reduce PCB loadings.

NPDES regulations allow the use of non-numeric, BMP-based water quality based effluent limits (WQBEL) where “[n]umeric effluent limitations are infeasible; or [t]he practices are reasonably necessary to achieve effluent limitations and standards or to carry out the purposes and intent of the CWA [Clean Water Act].” (40 CFR 122.44(k)3-4) According to the implementation section of the TMDL document, non-numeric WQBELs are used to comply with the provisions of the WLA “because BMPs are appropriate and reasonably necessary to achieve water quality standards and to carry out the goals of the CWA for the Tidal Potomac PCB TMDL.” The TMDL document further states that these BMPs are intended to focus on PCB source tracking and elimination at the source, rather than end-of-pipe controls, and that the TMDL program does not impart new implementation authorities. Therefore, consistent with the Commonwealth’s approach, the City’s main focus is to “use existing programs in order to attain its water quality goals.”

This approach focuses on the development and implementation of procedures based on historical activity and land use that identifies potential high-risk properties. It also focuses on enhanced education and outreach, and employee training to eliminate and reduce potential PCB loads.

Based on this understanding and current permit requirements, the City will continue to implement the following strategies, which are discussed in greater detail in the preceding sections:

- Site review and evaluation of municipal facilities;
- Focus on screening for PCBs during the plan review process for development and redevelopment projects;
- Implementation of the erosion and sediment control program; and
- Enhanced education and outreach, and employee training.

a. Site Evaluation and Inspections for Municipal Facilities

In the 2008 – 2013 MS4 permit special conditions, the City was required to 1) perform outfall reconnaissance and to 2) evaluate all owned or operated properties for potential sources of the pollutant identified in the WLA. Within three years of the July 8, 2008 effective date, the City had to “conduct a site review and characterize the runoff for these properties where it determines that the pollutant identified in the WLA is currently stored, or has been transferred, transported or historically disposed of in a manner that would expose it to precipitation.” Through this evaluation, the City determined that it does not have any facilities that should be categorized as a “high risk” for PCBs and the stormwater runoff characterization was not warranted for this WLA pollutant. This evaluation was conducted during the 2009 – 2010 reporting period and included in the associated annual report. As part of this action plan and per the Special Condition requirements in the 2013 – 2018 MS4 general permit, the City reassessed possible significant sources of PCBs from facilities of concern owned or operated by the City that are not covered under a separate VPDES permit through the analyses of historical use. According to the 2013 – 2018 MS4 general permit, a significant source of pollutants from a facility of concern means a discharge where the expected pollutant load is greater than the average pollutant load for the land use identified in the TMDL. Additionally, municipal facility inspections are required to be conducted according to the requirements of Stormwater Pollution Prevention Plans (SWPPP).

i. Evaluation of Municipal Facilities

The City performed an assessment of municipal properties for sources of PCBs and searched for any “high risk” facilities that currently store, or have transferred, transported or disposed of PCBs in a manner that would expose it to precipitation and found none. The City also characterized stormwater runoff from “high risk” properties and found no evidence of PCBs. During the 2009 – 2010 permit reporting period, the property at 3550 Commonwealth Avenue was purchased by the City’s Department of Recreation, Parks & Cultural Activities (RPCA) using Open Space funding. It previously operated as an electrical substation from the mid 1950’s until recently. Due to historic transformer oil drippings confined to the equipment area, the site was remediated to remove the PCB-impacted soil documented as part of the Phase I/II Environmental Site Assessment (ESA) completed for the City in November 2008, with the remediation and confirmatory sampling completed by the seller per an agreement with the City. The consultant doing the remediation work provided a “Confirmation of Remediation Report for the Former Hume Substation” dated December 3, 2009.

A combination of historical data, aerial photos, interviews with City personnel, and review of the Alexandria County Land Records was used to ascertain the likelihood of past PCB contamination at municipal properties and found none. This research focused on those properties which may have operated at one time under one of DEQ’s high risk categories for PCBs. Identified high risk

category sites for potential sources of residual PCBs, which includes the following SICs: 26&27 (Paper and Allied Products), 30 (Rubber and Misc. Plastics), 33 (Primary Metal Industries), 34 (Fabricated Metal Products), 37 (Transportation Equipment), 49 (Electrical, Gas, and Sanitary Services), 5093 (Scrap Metal Recycling), and 1221&1222 (Bituminous Coal). The City evaluated the most current EPA PCB Transformer Registration Database to determine if any municipal properties are registered sites, indicating the presence and location of PCB-containing transformers that may be located on municipal properties, and found none.

Finally, the City reviewed data to determine if a Phase I ESA was performed and available for any municipal properties in conjunction with a real estate transaction or intention of develop / redevelop a property.

Milestones, Measurable Goals and Assessment Methods

ii. Municipal Facility Inspections

The City developed a facility inspection reporting form for use during the evaluation of municipal facilities determined to have the potential to discharge pollutants. This form was based on inspection requirements and sample forms used for facilities to comply with coverage under industrial stormwater permits. The SWPPPs created for high-priority municipal facilities include the requirement for quarterly visual inspections and annual comprehensive compliance evaluations. While the SWPPP lists possible site pollutants that may be discharged, the quarterly and annual inspections are conducted comprehensively such that other pollutants may be identified if present. Additionally, should any future evaluations of public facilities demonstrate the likelihood of the presence of PCBs due to past use, the SWPPP will include specific procedures to identify possible discharges of PCBs.

Milestones, Measurable Goals and Assessment Methods

The City performs inspections of high-priority municipal facilities based on the SWPPPs developed during the 2017 – 2018 MS4 program year, as required by the last two MS4 Permits. All SWPPP inspections are performed and documented in the SWPPP for that facility on a routine basis. A summary of the implementation and inspections performed during the reporting period are included in the appropriate associated annual report and included in the SWPPP.

b. Remediation Projects

If environmental investigations reveal the onsite presence of PCBs on a City owned or operated property, further investigations will be performed to determine the extent of onsite contamination. Remediation may be conducted if it is determined that remediation of the site is warranted. During the 2009 - 2010 reporting period under the 2008 - 2013 MS4 general permit, a PCB remediation project was conducted at the Hume Substation tract as described in Section 6.a.i. The resultant cleanup of the 0.53 acre former substation site resulted in a minor reduction in the overall City loading rate as modeled in the associated annual report.

Milestones, Measurable Goals and Assessment Methods

The City will coordinate with VDEQ in the ongoing consideration and execution of cleanup efforts for City-owned and operated facilities, as warranted. City projects whose past use includes any of the SIC codes identified in the identified high-risk category must include site investigations for PCBs.

c. Plan Review for Development and Redevelopment

The City adopted a standard condition used during the site plan review process for development projects and in and development SUPs requiring the screening for PCBs as part of the site characterization for sites that fall into VDEQ's identified high risk categories for PCBs. This standard condition was adopted during the 2009 - 2010 reporting period for the 2008 MS4 Permit and was revised during the 2014 - 2015 reporting period. The language reads:

The applicant shall screen for PCBs as part of the site characterization if any of the past uses are within the identified high risk category sites for potential sources of residual PCBs, which includes the following SICs: 26&27 (Paper and Allied Products), 30 (Rubber and Misc. Plastics), 33 (Primary Metal Industries), 34 (Fabricated Metal Products), 37 (Transportation Equipment), 49 (Electrical, Gas, and Sanitary Services), 5093 (Scrap Metal Recycling), and 1221&1222 (Bituminous Coal).

If environmental investigations discover the presence of PCBs onsite, the applicant must develop, implement, and submit for review, the proper environmental management plans prior to approval of the final site plan. These may include, but are not limited to, a Site Characterization Report/Extent of Contamination Study detailing the location, applicable contaminants, and the estimated quantity of any contaminated soils and/or groundwater at or in the immediate vicinity of the site; a Risk Assessment indicating any risks associated with the contamination; a Remediation Plan detailing how any contaminated soils and/or groundwater will be dealt with, including plans to remediate utility corridors. Utility corridors in contaminated soil shall be over excavated by two feet and backfilled with "clean" soil; a Health and Safety Plan indicating measures to be taken during remediation and/or construction activities to minimize the potential risks to workers, the neighborhood, and the environment.

The City developed a brochure about PCBs and why they are a concern in Alexandria. This brochure may be provided to target property owners during normal interactions (inspections, permit reviews, etc.) or during the redevelopment process.

Milestones, Measurable Goals and Assessment Methods

The City continues to include the standard condition and SUP language during the development review process.

- During the final site plan, staff ensures environmental reports are provided. All subject properties whose current or past use falls into one of the listed SIC codes are required to perform site investigations for PCBs.
- Annual MS4 reports include a sample of the language, a discussion of projects required to perform site testing, and a summary of findings, as warranted.

d. Implementation of Erosion and Sediment Control Program

Reductions in sediment loads from construction sites and development areas also will be of benefit for addressing the discharge of PCBs. The City administers a local E&SC program and Virginia Stormwater Management Program (VSMP). Staff are trained and receive certification through the Commonwealth for reviewing site plans for development and redevelopment, and for inspecting construction sites. Since PCBs may be associated with soils, the City will use designation of a responsible land disturber (RLD) per the Virginia Erosion and Sediment Control Regulations (VESCR) and project specifications to hold construction contractors responsible for

the proper implementation and maintenance of E&SC measures during development and redevelopment. The local E&SC program requires that any land-disturbing activity equal to or greater than 2,500 square feet must submit a grading plan and E&SC plan for review and approval prior to commencing a land-disturbing activity.

Additionally, the City operates a local VSMP effective July 1, 2014. Inspections related to E&SC and VSMP requirements are performed by the same staff. Inspection reports are completed every five business days and 48 hours following a measurable storm event. However, the inspectors also perform inspections for right-of-way, excavation, and other local permits. Therefore, the inspection staff visits active construction sites approximately every day; sometimes performing multiple visits in the same day. This level of oversight far exceeds regulatory requirements and helps provide extra assurance that E&SC measures are properly installed and maintained to control the export of soils.

Milestones, Measurable Goals and Assessment Methods

The City continues to implement the local E&SC and VSMP requirements, to include construction site inspection and reporting. The following take place:

- Ensure all applicable projects submit for coverage under the VPDES Construction General Permit, which includes updated SWPPP requirements for discharges to PCB impaired waters.
- Ensure all Chesapeake Bay land-disturbing activities have an approved grading plan prior to commencement.
- Ensure all required inspections are conducted by City staff.
- Ensure all corrective actions are complete within seven days.

e. Promotion of Elimination and Reduction

The standard condition language used during site plan review and SUPs also serves to educate the development community on PCBs and raise awareness of the possibility to encounter PCBs during redevelopment of private properties in the City. Given that the manufacture of PCBs was banned in 1979, the general public is unlikely to encounter PCBs. To be proactive, the City developed a brochure about PCBs and why they are a concern in Alexandria. This brochure is provided to target property owners during normal interactions (inspections, permit reviews, etc.) or during the redevelopment process. The brochure can be shared with staff and residents and is available online at alexandriava.gov/52652.

Employees receive training on pollution prevention and good housekeeping and recognizing and reporting illicit discharges. It is unlikely that staff will encounter PCBs during routine daily activities. However, if the site review and evaluation demonstrate the possible presence of PCBs at a municipal facility, staff working around or near the location will be trained measures to avoid exposure and how to identify possible discharges that may contain PCBs.

Finally, City staff perform investigations in response to public complaints about possible illicit discharges to the storm sewer system and surface waters. Staff from the Fire Marshall's Office with the EIU may enforce Chapter 13 of Title 11 of the City Code (Environmental Offenses), which prohibits non-stormwater discharges to the storm sewer system. EIU staff educates residents about illicit discharges, which may include distribution of the PCB brochure and related information.

Milestones and Measurable Goals

- Ensure inclusion of standard conditions during site plan and SUP reviews.
- Ensure information on PCBs is included in the City's website and update the information if appropriate.
- Ensure the PCB brochure is available to staff.
- Enhance illicit discharge employee training to include education on PCBs and document this training biennially.

7. Methods to Assess Action Plan Effectiveness

Demonstration of adequate progress may be achieved through tracking, monitoring, and/or reporting of BMP implementation, and/or other strategies as approved by VDEQ as part of the PCB TMDL Action Plan. Consistent with the Commonwealth's approach and the types of implementation strategies discussed in the TMDL document, the City will implement those BMPs discussed in Section 6. The successful implementation of the milestones and measurable goals of this action plan continue to demonstrate the effectiveness of the plan.

The Site Review was performed during the 2017 - 2018 reporting period. Site inspections associated with the development and implementation of SWPPPs for identified municipal facilities began during the 2017 - 2018 reporting period and are ongoing based on the City's internal implementation schedule. Remediation projects will occur on an as-needed basis. Plan review for development and redevelopment projects, to include review of SUP applications, is an ongoing process and standard conditions are included on all site plans related to the City's requirement to screen for PCBs, if warranted, based on past use. Sites whose historical use includes SIC codes that have been identified by VDEQ as having a likelihood of being associated with PCBs are required to screen for PCBs during environmental investigations. The City implements an aggressive E&SC program and VSMP that includes daily site visits and the requisite inspection reports completed at the required intervals. This level of oversight far exceeds the regulatory requirements and helps provide extra assurance that control measures and properly installed and maintained to control sediment export. Finally, the City has a robust illicit discharge and dumping investigation and enforcement program, along with an active education and outreach program for the possible presence of PCBs.

8. References

Developing Your Stormwater Pollution Prevention Plan: A Guide for Industrial Operators, Publication No. 833-B-09-002. U.S. Environmental Protection Agency. February 2009.

Guidance Memo No. GM-16-2006, TMDL Action Planning for Local Total Maximum Daily Loads as Required in the Small MS4 General Permit (VAR04) Effective July 1, 2013 and MS4 Individual Permits. Commonwealth of Virginia Department of Environmental Quality, Water Division. November 21, 2016.

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